

APPENDIX A
Etridiazole
PRODUCT AND RESIDUE CHEMISTRY

Tables A1-A3

Case No. 0009
Chemical No. 084701

Case Name: Terrazole
Registrant: Uniroyal Chemical Company, Inc.
Product(s): 98.6% T (EPA Reg. No. 400-413)

Table A1. PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? ¹	MRID Number ²
830.1550	Product identity and composition	Y	42912204 ³ , 42954701 ³ , CSF 3/6/95 ⁴
830.1600	Description of materials used to produce the product	Y	00001553, 42912201 ³
830.1620	Description of production process	Y	00001553, 42912201 ³
830.1670	Discussion of formation of impurities	Y	42912202 ³
830.1700	Preliminary analysis	Y	00158120, 42912203 ³ , 43597401 ⁴
830.1750	Certified limits	Y	42912204 ³ , CSF 3/6/95 ⁴
830.1800	Enforcement analytical method	Y	00158120, 42912203 ³ , 43597401 ⁴
830.6302	Color	Y	00001553
830.6303	Physical state	Y	00001553
830.6304	Odor	Y	00001553
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	Y	00001553, 42912210 ³ , 42912211 ³ , 42912212 ³
830.6314	Oxidation/reduction: chemical incompatibility	Y	42912213 ³
830.6315	Flammability	Y	00001553
830.6316	Explosibility	Y	00062469
830.6317	Storage stability	Y	00001553, 43232001 ⁵
830.6319	Miscibility	Y	00062469
830.6320	Corrosion characteristics	Y	00001553, 43232002 ⁵
830.7000	pH	Y	00001553
830.7050	UV/Visible absorption	N ⁶	
830.7100	Viscosity	Y	42912214 ³
830.7200	Melting point/melting range	N/A ⁷	
830.7220	Boiling point/boiling range	Y	00001553
830.7300	Density/relative density/bulk density	Y	00001553
830.7370	Dissociation constants in water	Y	42912209 ³
830.7550	Partition coefficient (n-octanol/water), shake flask method	Y	42515901 ⁸
830.7840	Water solubility: column elution method; shake flask method	Y	00001553, 00001644, 42912205 ³ , 42912206 ³ , 42912207 ³

<i>Guideline Number</i>	<i>Requirement</i>	<i>Are Data Requirements Fulfilled? ¹</i>	<i>MRID Number ²</i>
830.7950	Vapor pressure	Y	00001553, 42912208 ³

¹ Y = Yes; N = No; N/A = Not Applicable.

² **Bolded references were reviewed under the Terrazole (SRR) Reregistration Standard dated 3/30/89; and all other references were reviewed as noted.**

³ CBRS No. 12714, D195979, 3/18/94, K. Dockter.

⁴ CBRS No. 15417, D213928, 5/8/95, K. Dockter.

⁵ CBRS No. 13768, D203660, 6/22/94, K. Dockter.

⁶ The OPPTS Series 830, Product Properties Test Guidelines require data pertaining to UV/visible absorption for the PAI.

⁷ Data are not required because the T/TGAI is a liquid at room temperature.

⁸ CBRS No. 10875, D184741, 1/8/93, F. Toghrol.

Table A2. Food/Feed Use Patterns Subject To Reregistration for Etridiazole (Case 0009).

Site Application Type Application Timing	Formulation [EPA Reg. No.]	Max. Single Application Rate ^a	Use Limitations ^b
Barley, Peas, and Soybean			
Seed treatment	5% D [7501-54] 0.5 lb/gal EC [7501-57]	0.20-0.25 oz ai/bushel seed	
Beans			
Seed treatment	5% D [7501-54]	0.1 oz ai/bushel seed	
	0.5 lb/gal EC [7501-57]	0.125 oz ai/100 lbs seed	
Corn and Sorghum			
Seed treatment	5% D [7501-54] 0.5 lb/gal EC [7501-57]	0.1-0.125 oz ai/100 lbs seed	
Cotton			
Seed treatment	5% D [7501-54] 0.5 lb/gal EC [7501-57]	0.80-1.0 oz ai/100 lbs seed	
In-furrow At-planting	1.53% G [400-408] 2.5% G [400-406] 3.8% G [400-456] 0.4 lb/gal EC [400-475] 0.5 lb/gal EC [400-405] 0.5 lb/gal FIC [400-455]	0.23-0.38 lb ai/A	Apply only at planting. The labels prohibit the feeding or grazing of cotton foliage by livestock, and specify a 12-month plantback interval for <u>root crops</u> unless PCNB is registered for use on these crops. Applications of the EC and FIC formulations are made in 5-15 gal/A of water.
Peanuts			
Seed treatment	2.5% D [7501-111] [7501-153] 5% D [7501-54] 0.5 lb/gal EC [7501-57]	0.15-0.25 oz ai/100 lbs seed	

<i>Site Application Type Application Timing</i>	<i>Formulation [EPA Reg. No.]</i>	<i>Max. Single Application Rate^a</i>	<i>Use Limitations^b</i>
<i>Safflower</i>			
<i>Seed treatment</i>	<i>5% D [7501-54] 0.5 lb/gal EC [7501-54]</i>	<i>0.2-0.25 oz ai/100 lbs seed</i>	
<i>Wheat</i>			
<i>Seed treatment</i>	<i>5% D [7501-54] 0.5 lb/gal EC [7501-57]</i>	<i>0.1-0.125 oz ai/bushel seed</i>	

^a A maximum of one application/season is implied by the labeled use pattern.

^b Labels allowing seed treatment uses prohibit the use of treated seed for food, feed, or oil purposes and require that the treated seed be dyed.

Table A3. Residue Chemistry Science Assessments for Reregistration of Etridiazole.

<i>GLN: Data Requirements</i>	<i>Current Tolerances, ppm [40 CFR]</i>	<i>Must Additional Data Be Submitted?</i>	<i>References ¹</i>
860.1200: Directions for Use	N/A	Yes	See Table A.
860.1300: Plant Metabolism	N/A	No	00001689 00028419 00093751 43940001 ² 44054701 ³ 44285201 ⁴ 44453201 ⁵
860.1300: Animal Metabolism	N/A	No	00093753 00093754
860.1340: Residue Analytical Methods			
- Plant commodities	N/A	No	00001570 00001645 00002229 00002239 00002257 00028423 00028424 00028428 00014333 00093752 00139669
- Animal commodities	N/A	No	00001695 00093752 00093755
860.1360: Multiresidue Methods	N/A	No	43259601 ⁶
860.1380: Storage Stability Data	N/A	Yes ⁷	00093754 00093755 44285001 ⁸ 43305701 ⁹
860.1500: Crop Field Trials			
<u>Legume Vegetables (Succulent or Dried)</u>			
- Beans	None	No ¹⁰	
- Peas	None	No ¹⁰	
- Soybean, seed	None	No ¹⁰	
<u>Foliage of Legume Vegetables</u>			
- Soybean, forage and hay	None	No ¹⁰	
<u>Fruiting Vegetables</u>			
- Tomato	0.15 [§180.370]	Yes ¹¹	
<u>Cereal Grains Group</u>			
- Barley, grain	None	No ¹⁰	

Table B (continued).

<i>GLN: Data Requirements</i>	<i>Current Tolerances, ppm [40 CFR]</i>	<i>Must Additional Data Be Submitted?</i>	<i>References ¹</i>
- Corn, field, grain	0.05 [§180.370]	No ¹⁰	
- Sorghum, grain	None	No ¹⁰	
- Wheat, grain	0.05 [§180.370]	No ¹⁰	
<u>Forage, Fodder and Straw of Cereal Grains</u>			
- Barley, hay and straw	None	No ¹⁰	
- Corn, fodder and forage	0.1 [§180.370]	No ¹⁰	
- Sorghum, forage and stover	None	No ¹⁰	
- Wheat, forage and straw	0.1 [§180.370]	No ¹⁰	
- Wheat, hay	None	No ¹⁰	
<u>Miscellaneous Commodities</u>			
- Cottonseed	0.2 [§180.370]	No	00014318 00028427 00064191 00064194 44285901 ¹³
- Cotton gin by products	None	No	44285901 ¹³
- Peanut, nutmeat and hay	None	No ¹⁰	
- Safflower	None	No ¹⁰	
- Strawberries	0.2 [§180.370]	No ¹²	
860.1520: Processed Food/Feed			
- Barley, corn, peanut, safflower, soybean, and wheat	None	No ¹⁴	
- Cottonseed	None	No	44285901 ¹³
860.1480: Meat, Milk, Poultry, and Eggs			
- Eggs	0.05 [§180.370]	No	00093755 00093756
- Milk	0.05 [§180.370]	No	00093747 00093748

<i>GLN: Data Requirements</i>	<i>Current Tolerances, ppm [40 CFR]</i>	<i>Must Additional Data Be Submitted?</i>	<i>References ¹</i>
- Poultry fat, mby, and meat	0.1 [§180.370]	No	00093755 00093756
- Cattle, goats, hogs, horses, and sheep fat, mby, and meat	0.1 [§180.370]	No	00093747 00093748
860.1400: Water Fish and Irrigated Crops	None	N/A	
860.1460: Food Handling	None	N/A	
860.1850: Confined Rotational Crops	N/A	No	44311401 ¹⁵
860.1900: Field Rotational Crops	None	Yes ¹⁶	

1. **Bolded** references were reviewed in the Residue Chemistry Chapter of the Etridiazole Reregistration Standard dated 9/80, and *italicized* references were reviewed or summarized in the Residue Chemistry Chapter of the Etridiazole Second Round Review (SRR) dated 3/30/89. All other references were reviewed as noted.
2. DP Barcode D224428, D. Hrdy, 11/14/97
3. DP Barcode D228163, D. Hrdy, 5/30/97
4. DP Barcode D244973, D. Drew, 10/29/98
5. DP Barcode D244975, S. Law, 9/29/98
6. DP Barcode D205025, L. Edwards, 7/15/94
7. Data are required depicting the storage stability of the monoacid metabolite stored frozen in animal commodities for up to 2 years. Samples from the poultry and ruminant feeding studies were stored frozen for approximately 6 weeks and 2 years, respectively, prior to analysis for residues of the monoacid.
8. DP Barcode D244972, D Soderberg, 1/20/99
9. DP Barcode D255738, D. Drew/M. Centra, 11/3/99
10. HED concluded (DP Barcode D188371, P. Deschamp, 3/4/93) that metabolism studies conducted at exaggerated rates on wheat and soybean would support seed treatment uses on barley, beans, corn, cotton, peanuts, peas, safflower, sorghum, soybeans, and wheat. Adequate metabolism studies on cotton, soybean, and wheat (DP Barcodes D224428, D228163, and D244973; D Hrdy/D. Drew; 5/30/97, 11/14/97, and 10/29/98) support the residue data requirements for these seed treatment uses.
11. The registrant is no longer supporting uses on tomatoes grown domestically. In order to establish a tolerance on imported tomatoes, additional field trial data, as outlined in the EPA Import Tolerance Guidance document (HED SOP 98.6), are required.

12. The registrant is no longer supporting uses on strawberries.
13. DP Barcode D244960, S. Law/D. Soderberg, 1/19/99
14. As residues of etridiazole and the monoacid metabolite were nondetectable in soybean seed and wheat grain from the exaggerated rate (10x) soybean and wheat metabolism studies, processing studies and tolerances are not required for the processed fractions of barley, corn, peanuts, safflower, sorghum, soybeans and wheat.
15. DP Barcode D244963, D. Drew, 12/3/98
16. If the registrant wants shorter PBIs than those recommended by the Agency in the review of the confined rotational crop study, limited field trial data are required.

APPENDIX B
Etridiazole
HANDLER AND POST-APPLICATION EXPOSURE
RISK ASSESSMENT

Tables B1-B9

Note:

Explanation of column headings for Etridiazole handler risk assessment tables.

Application rates represent the highest rates (from all labels with that formulation type) for various agricultural crops and turf applications. These rates are expressed as: low, mid-range (med), and maximum (high). This translates to the highest application rate for various crops. Separate categories (such as mixing/loading WP for chemigation vs. groundboom) are presented because of the distinct differences in application rates and acres treated. More or less categories may be used to represent the handler exposure in the final version.

Application rates are generally in lbs ai/acre. However, exceptions exist, such as lbs ai/lbs seed treated. Low-pressure handwand application is expressed in lbs ai/thousands of square feet. High-pressure handwand application rates are in lbs ai/gallon. Likewise, the number of units treated will correspond, for example:

$$\text{lbs ai/acre} \times \text{acres/day} = \text{lbs ai/day}$$

The number of treatments per year is also based on label information. However, the “private”, farmer, or golf-course grounds supervisor, may treat different areas or crops at different times. Generally, this column will be equal to the label maximum number of applications. Sometimes it is lower or higher based on use information. The “commercial” number of treatments is the estimated number of applications for a professional pesticide applicator not associated with a single location. The “default,” used in the absence of specific information, is 10 times the private applicator rate.

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Mixer/Loader Descriptors			
Mixing/Loading Wettable Powder for Groundboom Application to Golf Course Turf (1a) or chemigation (1b)	PHED VI.1	(1a) 40 acres. (1b) 2 acres	<p>Single Layer, No Gloves: Dermal replicates = 22-45, ABC grade. Hand replicates = 7, ABC grade. Low Confidence due to the low number of hand replicates; medium confidence in inhalation data.</p> <p>Single Layer, Gloves: "Best Available" grades: Inhalation ABC grades; 44 replicates; Hand replicates = 24, ABC grade. Medium Confidence.</p> <p>Engineering Controls (to represent water-soluble packets): "Best Available" grades: Hands acceptable grade; dermal and inhalation all grades. Hands = 5 replicates; dermal = 6 to 15 replicates; inhalation = 15 replicates. Low confidence in hands, dermal and inhalation data.</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator.</p>
Mixing/Loading Dry Flowable for In-Furrow Application (2)	PHED VI.1	80 acres / 230^U	<p>Single Layer, No Gloves: Dermal = 16 - 26 replicates, AB grade. Hand = 7 replicates, AB grade. Low Confidence due to the small number of hand replicates.</p> <p>Single Layer, Gloves: Dermal = 16 - 26 replicates, AB grade. Hand = 21 replicates, AB grade. <u>NOTE:</u> this run has a lot of non-detects for the glove exposure values. High Confidence in inhalation data: Replicates = 23, AB grade.</p>

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Loading Granular for In-Furrow Application (3)	PHED v 1.1	80 acres / 230^U	<p>Single layer, no gloves: Dermal replicates = 33 - 78, ABC grade. Hand = 10 replicates, All grade. Low Confidence due to the poor grade quality of the hand replicates and low replicate number.</p> <p>Single Layer, gloves: Dermal replicates = 33 - 78, ABC grade. Hand = 45 replicates, AB grade. Medium Confidence</p> <p>Coveralls over single layer, plus gloves: Dermal replicates = 12 - 59, ABC grade. Hand = 45 replicates, AB grade. Low Confidence due to the low replicate number for many body parts.</p> <p>Inhalation: 58 replicates, AB grade. High Confidence</p> <p>Engineering Control: No data available.</p>
Mixing/Loading Liquid (EC) for In-Furrow Application (4a: on-farm)	PHED v. 1.1	80 acres / 230^U	<p>Single layer, no gloves: Dermal = 72 to 122 replicates, AB grade. Hand = 53 replicates, AB grade. High Confidence</p> <p>Single layer, gloves: Dermal = 72 to 122 replicates, AB grade. Hand = 59 replicates, AB grade. High Confidence</p> <p>Inhalation: Replicates = 85, AB grade. High Confidence.</p>
Mixing/Loading Liquid (EC) for On-Farm Seed Treatment (4b)	PHED v. 1.1	1400 lbs cotton seed 7200 lbs peanut seed (for 80 A/day)	
Commercial Seed Treatment Loader/Applicator: Liquid Formulation (4c)	Uniroyal Data	330,000 lbs seed	See Study Review; based on geometric mean of data and “typical” volume of seed handled per day.
Commercial Seed Handler/Bagger: Liquid Formulation (4d)	Uniroyal Data	330,000 lbs seed	See Study Review; based on geometric mean of data and “typical” volume of seed handled per day.
Loading Dust for Commercial Seed Treatment (WP Surrogate) (5)	PHED v. 1.1	330,000 lbs seed	<p>See Wettable Powder (1a); wettable powder has similar particulate size to dusts therefore used as a surrogate when there is a lack of data.</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator.</p> <p>No Data for Engineering Control</p>

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Applicator Descriptors			
Applying Liquid to Golf Course Turf with a Groundboom Sprayer (6a)	PHED VI.1	40 acres.	Single layer, no gloves: Dermal replicates = 23 to 42, AB grade. Hand replicates = 29, AB grade. The neck location is limited to 23 observations; the next lowest number of observations is 32. High Confidence.
Applying Liquid In-Furrow to Soil (6b)	PHED v. 1.1	80 / 230^U acres	Single layer, gloves: Dermal replicates = 23 to 42, AB grade. Hand replicates = 21, ABC grade. The neck location is limited to 23 observations; the next lowest number of observations is 32. Medium Confidence. Inhalation: 22 replicates, AB grade. High Confidence Engineering Control: Enclosed cab (groundboom): Dermal replicates = 20 to 31, ABC grade. Hand replicates = 16, ABC grade. Medium Confidence; inhalation: 16 replicates, AB grade. High Confidence
Loading and Applying Granular In-Furrow to Soil (7)	PHED v. 1.1	80 / 230^U	Single layer, no gloves: Dermal Replicates = 1 to 5, AB grade. Hand replicates = 5, AB grade. Low Confidence due to inadequate replicate number. Single layer, gloves: Dermal replicates = 1 to 5, AB grade. Hand replicates = 0. Low Confidence due to inadequate replicate number. <u>NOTE:</u> Gloved hand replicates are unavailable for this exposure scenario. The only way to estimate gloved hand exposure is to reduce the “no glove” hand value by 90%. Inhalation: 5 replicates, AB grade. Low Confidence due to the low replicate number.
Mixer/Loader/Applicator Descriptors			
Mixing, loading and Applying Liquid (EC) In-Furrow (groundboom MLAP surrogate) (8)	PHED v. 1.1	80 / 160^U	Single layer, no gloves: Dermal = 17 to 67, ABC grade. Hand = 29 replicates, ABC grade. Medium Confidence Single layer, gloves: Dermal = 17 to 67, ABC grade. Hand = 32 replicates, AB grade. Medium Confidence.
Mixing/Loading/Applying as a Seed Treatment (dry) in planter box (9a)	Fenske Study data	1440 lbs seed (study data and cotton data)	All data were for gloved hands; seed treatment only, not planting; 60 replicates (see study).

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Treating Seed Manually Using Liquid (EC) formulation on Farm (9b)	PHED v. 1.1 (surrogate)	1440 lbs seed (study data and cotton data)	No chemical-specific data: surrogate liquid mixer/loader (4a)
Mixing/Loading/Applying EC as Liquid Drench using Low-pressure Hand Wand (10)	PHED v. 1.1	5000 sq. ft. - 0.5 acres	<p>Single layer, no gloves: Dermal replicates = 9 to 80, ABC grade. Hand replicates = 70, All grade. Low Confidence due to inadequate replicate number and low hand grades used (lots of “E” grade.)</p> <p>Single layer, gloves: Dermal replicates = 9 to 80, ABC grade. Hand replicates = 10, ABC grade. Low Confidence due to inadequate replicate number. The gloved hand estimates are based almost entirely on non-detects.</p> <p>Inhalation: 80 replicates, ABC grade. Medium Confidence.</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator Engineering controls not feasible.</p>
Mixing/Loading/Applying EC as Liquid Drench using High-pressure Hand Wand (11)	PHED v. 1.1	1000 gallons	<p>Single layer, no gloves: Dermal replicates = 7 to 13, AB grade. Hand replicates = 0. “No glove” hand data are unavailable for this use scenario. (2 of 13 nondetect). Low Confidence</p> <p>Single layer, gloves: Dermal replicates = 7 to 13, AB grade. Hand replicates = 13, C grade. Low Confidence due to inadequate replicate number.</p> <p>Inhalation: 13 replicates, A grade. Low Confidence due to inadequate replicate number.</p>
Loading and Applying Granular Formulation to Golf Course Turf Using a Belly Grinder (12)	PHED v. 1.1	1 acre	<p>Single layer, no gloves: Dermal replicates = 29 to 45, ABC grade. Hand replicates = 23, ABC grade. Medium Confidence.</p> <p>Single layer, gloves: Dermal replicates = 29 to 45, ABC grade. Hand replicates = 20, All grades. Low Confidence</p> <p>Inhalation: 40 replicates, AB grade. High Confidence</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator</p>

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Loading and Applying Granular Formulation to Golf Course Turf Using Push-Type Spreader (13)	PHED v. 1.1	5 acres	<p>Single layer, no gloves: Dermal replicates = 0 to 15, C grade. Hand replicates = 15, C grade. Low Confidence due to inadequate replicate number. There are no head or neck replicates for this clothing scenario. All other body parts contain 15 replicates.</p> <p>Single layer, gloves: Dermal replicates = 0 to 15, C grade. Hand replicates = 0. Low Confidence due to inadequate replicate number. There are no head, neck or hand replicates for this clothing scenario. All other body parts contain 15 replicates.</p> <p>Inhalation: 15 replicates, B grade. High Confidence.</p>
Loading and Applying Granular Formulation to Golf Course Turf Using Tractor-drawn Spreader (14)	PHED v. 1.1	5 acres	Add scenarios (3) and (7)
Mixing, Loading, and Applying WP to Golf Course Turf with Ground Boom (15)	PHED v. 1.1	40 acres	<p>Combine Scenarios (1a) and (6a)</p> <p>Engineering: WSB or enclosed-cab Groundboom (6b)</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator</p>
Loading and Applying Granules to Potting Soil (16)	PHED v. 1.1	10 cubic yards	<p>Use hand dispersing granules as surrogate (same as 25):</p> <p>Single layer, no glove: Dermal replicates = 16, ABC grade. Hand replicates = 0. Low Confidence due to lack of “no glove” replicates for this use scenario.</p> <p>Single layer, glove: Dermal replicates = 16, ABC grade. Hand replicates = 15, ABC grade. Medium Confidence. The 15 hand replicates are all nondetect (LOQ = 41 Fg).</p> <p>Inhalation: 16 replicates, ABC grade. Medium Confidence.</p> <p>PHED data used for baseline, 50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator</p>

Table B1: Exposure Scenario Descriptions for the Use of Etridiazole

Exposure Scenario (Number)	Data Source	Standard Assumptions^a (8-hr work day)	Comments^b
Loading and Applying Wettable Powder to Potting Soil (17)	PHED v. 1.1	10 cubic yards	Use mixing/loading WP as surrogate (mixed dry): (1a)
Loading and Applying Granules to Soil using Belly Grinder (18,19)	PHED v. 1.1	1 acre	See Scenario 12 PHED data used for baseline,50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator
Loading and Applying Granules to Soil using Push-Type Spreader (20,21)	PHED v. 1.1	1 acre	See Scenario 13 PHED data used for baseline,50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator
Loading and Applying Granules to Soil using Tractor-Drawn Spreader(22,23)	PHED v. 1.1	5 acres	See Scenario 14 PHED data used for baseline,50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator
Loading/Applying Granular via Power Dust Blower (24)	NO DATA	NO DATA	NO DATA
Applying Granules by Hand to Soil Trench or Turf (25)	PHED v. 1.1	5000 sq. ft.	Single Layer, No Glove: Dermal replicates = 16, ABC grade. Hand replicates = 0. Low Confidence due to lack of “no glove” replicates for this use scenario. Single Layer, gloves: Dermal replicates = 16, ABC grade. Hand replicates = 15, ABC grade. Medium Confidence. Inhalation: 16 replicates, ABC grade. Medium Confidence PHED data used for baseline,50% Protection Factors (PFs) added for Coveralls; 90% Inhalation Protection Factor added for Organic Vapor/Pesticide Respirator

^a Standard Assumptions based on an 8-hour work day as estimated by HED, or BEAD data, or Registrant data. The area treated per day also represents amount to

be mixed up per day.

^U Uniroyal estimated acreage/day

^b "Best Available" grades are defined by HED SOP for meeting Subdivision U Guidelines. Best available grades are assigned as follows: matrices with grades A and B data and a minimum of 15 replicates; if not available, then grades A, B and C data and a minimum of 15 replicates; if not available, then all data regardless of the quality and number of replicates. Data confidence are assigned as follows:

High = grades A and B and 15 or more replicates per body part

Medium = grades A, B, and C and 15 or more replicates per body part

Low = grades A, B, C, D and E or any combination of grades with less than 15 replicates

**Table B2: Worker Exposure Calculated from Uniroyal Study of Vitavax Application in Commercial Seed Treatment
Using Terra-Coat L-205N Application Rates**

Level of Protective Equipment	Handler Job Description	Dermal and Inhalation Total Unit Dosage (mg/lb ai)^a	Lb Treated per Day^b	Label Application Rate: Terra-Coat Liquid (lb ai/lb seed treated)	Total Dose (mg/kg/day)	IT MOE^d	Work days/Year	LADD (mg/kg/day)	Cancer^f
Single Layer with Gloves	Loader/Applicator	0.064	330000	0.00016	0.048	99	60	4.0E-03	1.3E-04
Single Layer with Gloves	Loader/Applicator	0.064	800000	0.00016	0.12	40	60	NA	NA
Single Layer with Gloves	Seed Handler	0.0024	330000	0.00016	0.0018	2500	60	1.5E-04	5.0E-06
Single Layer with Gloves	Seed Handler	0.0024	800000	0.00016	0.0044	1000	60	NA	NA
Single Layer No Gloves (calculated)	Loader/Applicator	0.356	330000	0.00016	0.27	18	60	2.2E-02	7.3E-04
Single Layer No Gloves (calculated)	Loader/Applicator	0.356	800000	0.00016	0.65	6.9	60	NA	NA
Single Layer No Gloves (calculated)	Seed Handler	0.015	330000	0.00016	0.011	420	60	9.3E-04	3.1E-05
Single Layer No Gloves (calculated)	Seed Handler	0.015	800000	0.00016	0.027	160	60	NA	NA

IT = Intermediate-Term

NA = Not applicable to this scenario: cancer risks are based on “typical” application rates and volumes, not the higher rate.

^aTotal (Dermal + Inhalation) Unit Dose was calculated from Vitavax study for lindane residues MRID 447315-01; inhalation dose less than 1% of total.

^b Pounds treated per day based on study findings and equipment manufacturer’s specifications; typical and high capacity used.

^cTotal (Dermal + Inhalation) Daily Dose (mg ai/kg/day) = (mg/lb ai) x lb treated/day * application rate (mg/lb seed) / Body weight (70kg for intermediate-term) x Absorption (100%)

^dMOE = NOAEL (mg/kg/day) / Daily Dose (mg/kg/day); where intermediate-term NOAEL = 4.8 mg/kg/day

^eLADD = Lifetime Avg Daily Dose = $\frac{\text{Absorbed daily dose (based on 70 kg body wt)} \times \text{Exposure Days/Yr} \times 35 \text{ years working}}{70 \text{ years (lifetime)} \times 365 \text{ days/yr}}$

^fCancer risk = LADD x Q_1^* [0.0333 (mg/kg/day)⁻¹]

Table B3: MOE and Cancer Risk Estimate for On-Farm Dust Formulation Seed Treatment Based on Data from Fenske et al. Study; Mixer/Loader, Single Layer PPE With Gloves											
Formulation n	Dermal Unit Dosage (mg/lb ai) ^a	Inhalation Unit Dose (mg/lb ai) ^a	Typical Lb Treated per Day ^b	Application Rate (lb ai/lb seed) Cotton	Dermal Dose (mg/day)	Inhalation Dose (mg/day)	Total Dose (mg/day) ^c	ST MOE ^d	IT/LT MOE ^e	LADD (mg/kg/day) ^f	Cancer ^g
Terraclor Super X 20-5	10.4	0.0024	1440	0.0005	7.5	0.0017	7.5	130	45	8.9E-03	3.0E-04

Mixer/Loader Only. No Application Data.

Formulation adjusted for Terraclor Super X 20-5 (dust formulation) application rate.

Study findings adjusted for body surface areas per Exposure Factors Handbook 1997 and standard respiratory rate for handlers of 29 l/min.

IT = Intermediate-Term duration; ST = Short-term duration

Cancer risks are based on “typical” application rates and volumes

^a Unit Doses (dermal and inhalation) were calculated from published study (see References) measuring lindane residues; note inhalation dose less than 1% of total.

^b Pounds treated per day based on study findings and equipment and Registrant-submitted data for cotton seed application.

^c Total (Dermal + Inhalation) Daily Dose (mg ai/kg/day) = (mg/lb ai) x lb treated/day * application rate (mg/lb seed) / Body weight (70kg for intermediate-term) x Absorption (100%)

^d ST = Short-term MOE = NOAEL (mg/kg/day) / Daily Dose (mg/kg/day); where short-term NOAEL = 15 mg/kg/day; 60 kg b.w.

^e MOE = NOAEL (mg/kg/day) / Daily Dose (mg/kg/day); where intermediate-term NOAEL = 4.8 mg/kg/day; 70 kg b.w.

$$^f \text{ LADD} = \text{Lifetime Avg Daily Dose} = \frac{\text{Absorbed daily dose (based on 70 kg body wt)} \times \text{Exposure Days/Yr [60 days/yr]} \times 35 \text{ years working}}{70 \text{ years (lifetime)} \times 365 \text{ days/yr}}$$

$$^g \text{ Cancer risk} = \text{LADD} \times Q_1^* [0.0333 \text{ (mg/kg/day)}^{-1}]$$

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

Exposure Scenario	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: Low	3.2	280	3.2	70	280	56	90	2800	87	1200	4.9E+04	1200
(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: Typical	1.6	140	1.6	35	140	28	45	1400	43	600	2.5E+04	590
(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: High	0.80	69	0.79	17	69	14	22	690	22	300	1.2E+04	290
(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): Low	320	2.7E+04	310	6600	2.7E+04	5300	NE	NE	NE	NE	NE	NE
(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): Typical	160	1.4E+04	160	3500	1.4E+04	2800	NE	NE	NE	NE	NE	NE
(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): High	110	9500	110	2400	9500	1900	NE	NE	NE	NE	NE	NE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: Low	320	2.7E+04	310	320	2.7E+04	310	NE	NE	NE	NE	NE	NE

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: Typical	460	3.9E+04	450	460	3.9E+04	450	NE	NE	NE	NE	NE	NE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: High	460	3.9E+04	450	460	3.9E+04	450	NE	NE	NE	NE	NE	NE
(3) Loading Granular for in-Furrow Application: UniRoyal Estimated Rate	2300	1.2E+04	1900	4700	1.9E+04	3800	NE	NE	NE	NE	NE	NE
(3) Loading Granular for In-furrow Application: Typical	5600	2.8E+04	4600	6.8E+03	2.8E+04	5500	NE	NE	NE	NE	NE	NE
(3) Loading Granular for In-furrow Application: High	3500	1.7E+04	2900	4.3E+03	1.7E+04	3400	NE	NE	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Low	11	2.6E+04	11	1400	2.6E+04	1300	NE	NE	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Typical	20	4.9E+04	20	2.6E+03	4.9E+04	2400	NE	NE	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: High	10	2.5E+04	10	1.3E+03	2.5E+04	1200	NE	NE	NE	NENE	NE	NE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: Low (Peanuts)	550	1.3E+06	550	7.0E+04	1.3E+06	6.6E+04	NE	NE	NE	NE	NE	NE

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: Typical (Peanuts)	280	6.7E+05	280	3.5E+04	6.7E+05	3.3E+04	NE	NE	NE	NE	NE	NE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: High (Cotton)	350	8.3E+05	350	4.4E+04	8.3E+05	4.1E+04	NE	NE	NE	NE	NE	NE
(4c) Loader/Applicator: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	49	1.2E+04	48	280	1.2E+04	270	NE	NE	NE	NE	NE	NE
(4c) Loader/Applicator: Liquid for Commercial Seed Treatment: High Volume (Uniroyal Study)	20	5100	20	110	5.2E+03	110	NE	NE	NE	NE	NE	NE
(4d) Seed Handler/bagger: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	1200	9.7E+04	1200	7900	9.7E+04	7300	NE	NE	NE	NE	NE	NE
(4d) Seed Handler/bagger: Liquid for Commercial Seed Treatment: High Volume (Uniroyal Study)	480	4.0E+04	480	3300	4.0E+04	3000	NE	NE	NE	NE	NE	NE
(5) Loading Dust for Commercial Seed Treatment: Low (WP surrogate)	12	1000	12	260	1000	200	330	NE	NE	NE	NE	NE

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(5) Loading Dust for Commercial Seed Treatment: Typical (WP surrogate)	5.9	510	5.8	130	510	100	170	5.1E+03	160	NE	NE	NE
(5) Loading Dust for Commercial Seed Treatment: High (WP surrogate)	0.61	52	0.60	32	130	26	41	1300	40	560	2.3E+04	540
(6a) Applying to Turf/Golf Course with Groundboom Sprayer: low	680	1.3E+04	800	850	1.6E+04	800	NE	NE	NE	NE	NE	NE
(6a) Applying to Turf/Golf Course with Groundboom: typical	420	8000	400	420	8.0E+03	400	NE	NE	NE	NE	NE	NE
(6a) Applying to Turf/Golf Course with Groundboom: High	210	4000	200	210	4.0E+03	200	NE	NE	NE	NE	NE	NE
(6b) Applying Liquid In-furrow: low	2200	4.1E+04	2100	2200	4.1E+04	2100	NE	NE	NE	NE	NE	NE
(6b) Applying Liquid In-furrow: typical	4200	8.0E+04	4000	4.2E+03	8.0E+04	4000	NE	NE	NE	NE	NE	NE
(6b) Applying Liquid In-furrow: high	2100	4.0E+04	2000	2.1E+03	4.0E+04	2100	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (Low)	1100	6700	920	2200	6700	1700	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (typical)	2000	1.3E+04	1800	4.3E+03	1.3E+04	3200	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (High)	1600	1.0E+04	1400	3.4E+03	1.0E+04	2600	NE	NE	NE	NE	NE	NE

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

Exposure Scenario	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(8) Combined M/L/App EC In-Furrow to Soil	120	3.4E+04	120	2100	2.3E+04	1900	NE	NE	NE	NE	NE	NE
(8) Combined M/L/App EC In-Furrow to Soil	160	4.6E+04	160	2.8E+03	3.1E+04	2600	NE	NE	NE	NE	NE	NE
(8) Combined M/L/App EC In-Furrow to Soil	80	2.3E+04	80	1.4E+03	1.5E+04	1300	NE	NE	NE	NE	NE	NE
(9) Mixing/Loading/Applying as a Seed Treatment (dry) in planter box [Fenske study data] (per lb seed)	NO UNGLOVED DATA	5.2E+05	NO DATA	120	5.2E+05	120	NE	NE	NE	NE	NE	NE
(10) Mixing/Loading/Applying EC as Drench using Low pressure Handwand: Typical (per Gallon diluted mixture)	140	4.8E+05	140	3.3E+04	4.8E+05	3.1E+04	NE	NE	NE	NE	NE	NE
(11) Mixing/Loading/Applying EC using High Pressure Handwand (ie, Nursery/Greenhouse): High	330	6700	320	320	6.7E+03	310	NE	NE	NE	NE	NE	NE
(12) Loading+Applying Granules (1.3G) to Golf Course Turf using Belly Grinder: Typical Rate/Acre	20	3200	20	22	3.2E+03	21	35	3200	35	No Data	No Data	No Data

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(13) Loading+Applying Granules (1.3G) to Golf Course Turf Using Push Type Spreader: Typical rate/Acre	14	6300	14	31	6.3E+03	31	53	6.3E+04	53	No Data	No Data	No Data
(14) Loading+Applying Granules (1.3G) to Golf Course Turf Using Tractor-pulled Spreader: Typical rate/Acre (2 scenarios added)	4600	1.4E+04	3400	4.6E+03	1.4E+04	3500	NE	NE	NE	NE	NE	NE
(15) Combined M/L/App WP to Golf Course Turf via Groundboom (added 2 scenarios):Low	3.2	270	3	53	220	42	66	2100	64	630	1.4E+04	600
(15) Combined M/L/App WP to Golf Course Turf via Groundboom: Typical	1.6	140	2	33	140	27	41	1300	40	400	8.8E+03	380
(15) Combined M/L/App WP to Golf Course Turf via Groundboom: High	0.80	68	0.8	16	68	13	21	670	20	200	4.4E+03	190
(16) Mixing/Loading Applying Granules to Potting Soil (per CU yd)	3.4E+05	1.7E+06	2.9E+05	4.2E+05	1.7E+06	3.3E+05	NE	NE	NE	No Data	No Data	No Data
(17) Mixing/Loading/Applying WP to Potting Soil (per Cu Yd)	370	3.2E+04	370	7.62E+03	3.12E+04	6100	NE	NE	NE	NE	NE	NE

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(18) Loading+Applying Granules (8G) to Soil using Belly Grinder: Typical Rate/Acre	5.80	930	5.7	6	930	6	10	930	9	No Data	No Data	No Data
(19) Loading+Applying Granules (5G) to Soil using Belly Grinder: Typical Rate/Acre	5.1	830	5.1	6	830	5.5	9	830	14	No Data	No Data	No Data
(20) Loading+Applying Granules (5G) to Soil Using Push Type Spreader: Typical rate/Acre	3.6	1600	3.5	8	1600	7.9	14	1.6E+04	15	No Data	No Data	No Data
(21) Loading+Applying Granules (8G) to Soil Using Push Type Spreader: Typical rate/Acre	4.0	1800	4.0	9	1800	8.8	15	1.8E+04	15	No Data	No Data	No Data
(22) Loading+Applying Granules (8G) to Soil Using Tractor-pulled Spreader: Typical rate/Acre (2 scenarios added)	1300	4000	1000	1300	4000	1000	NE	NE	NE	No Data	No Data	No Data
(23) Loading+Applying Granules (5G) to Soil Using Tractor-pulled Spreader: Typical rate/Acre (2 scenarios added)	150	440	110	150	440	110	NE	NE	NE	No Data	No Data	No Data
(24) Loading/Applying Granular via Power Dust Blower	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Table B4: Etridiazole Handler Risk Assessment: Short-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls over Clothing and Organic Vapor Respirator			Engineering Controls: Soluble Bag for WP; Gloves for M/L Only		
Exposure Scenario	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE	Dermal ST MOE	Inhalation ST MOE	Combined ST Dermal & Inhalation MOE
(25) Dispersing Granules By Hand	4.9	1100	4.9	7.4	1100	7.3	13	1.1E+04	13	No Data	No Data	No Data

Note: table values were calculated using a spreadsheet and then rounded to two significant figures.

ST = Short Term (generally seven days or less)

'No Data' indicates data not available for that scenario.

"NE" = scenario not evaluated.

Equations used in this table include:

Daily dermal exposure (mg ai/day) = Unit exposure (mg ai/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)

[Note: (lb ai/acre) and (A/day) are replaced, respectively, with (lb ai/gal) and (gal/day), or lb ai/lb seed when appropriate.]

Daily exposure (mg ai/day) = [Unit exposure (Fg/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)] / (1000 Fg/mg)

Potential absorbed daily dermal or inhalation dose = (mg ai/kg/day) x Absorption (100%) / Body weight

Body weight = short-term 60 kg; intermediate-term 70 kg

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

MOE_{Combined} = 1 / (1/MOE_{dermal} + 1/MOE_{inhalation})

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	<i>Baseline (Single Layer Clothing)</i>			<i>Single Layer Clothing With Chemical Resistant Gloves</i>			<i>Coveralls Over Single Layer Clothing With Gloves and OV Respirator</i>			<i>Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only</i>		
<i>Exposure Scenario</i>	<i>Dermal IT MOE</i>	<i>Inhalation IT MOE</i>	<i>Combined IT Dermal & Inhalation MOE</i>	<i>Dermal IT MOE</i>	<i>Inhalation IT MOE</i>	<i>Combined IT Dermal & Inhalation MOE</i>	<i>Dermal IT MOE</i>	<i>Inhalation IT MOE</i>	<i>Combined IT Dermal & Inhalation MOE</i>	<i>Dermal IT MOE</i>	<i>Inhalation IT MOE</i>	<i>Combined IT /LT Dermal & Inhalation MOE</i>
<i>(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: Low</i>	1.2	100	1.2	26	100	21	33	1000	32	450	1.8E+04	440
<i>(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: Typical</i>	0.60	51	0.59	13	51	10	17	510	16	230	9.2E+03	220
<i>(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: High</i>	0.30	26	0.29	6	26	5	8	260	8	110	4.6E+03	110
<i>(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): Low</i>	120	1.0E+04	120	2600	1.0E+04	2000	NE	NE	NE	NE	NE	NE
<i>(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): Typical</i>	61	5200	60	1300	5200	1100	NE	NE	NE	NE	NE	NE

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): High	41	3600	41	900	3600	720	NE	NE	NE	NE	NE	NE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: Low (Uniroyal Rate)	120	1.0E+04	120	120	1.0E+04	120	NE	NE	NE	NE	NE	NE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: Typical	170	1.5E+04	170	170	1.5E+04	170	NE	NE	NE	NE	NE	NE
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: High	170	1.5E+04	170	170	1.5E+04	170	NE	NE	NE	NE	NE	NE
(3) Loading Granular for in-Furrow Application: UniRoyal Estimated Rate	870	4300	720	1800	7200	1400	NE	NE	NE	NE	NE	NE
(3) Loading Granular for In -furrow Application: Typical	2100	1.0E+04	1700	2.5E+03	1.0E+04	2000	NE	NE	NE	NE	NE	NE
(3) Loading Granular for In-furrow Application: High	1300	6500	1100	1600	6500	1300	NE	NE	NE	NE	NE	NE

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Low (Uniroyal Rate)	4	9700	4	510	9700	480	NE	NE	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Typical	8	1.8E+04	8	9.6E+02	1.8E+04	910	NE	NE	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: High	4	9200	4	4.8E+02	9200	460	NE	NE	NE	NE	NE	NE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: Low (Peanuts)	210	5.0E+05	210	2.6E+04	5.0E+05	2.5E+04	NE	NE	NE	NE	NE	NE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: Typical (Peanuts)	100	2.5E+05	100	1.3E+04	2.5E+05	1.2E+04	NE	NE	NE	NE	NE	NE
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: High (Cotton)	130	3.1E+05	130	1.6E+04	3.1E+05	1.5E+04	NE	NE	NE	NE	NE	NE
(4c) Loader/Applicator: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	18	4.7E+03	18	100	4.7E+03	100	NE	NE	NE	NE	NE	NE

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(4c) Loader/Applicator: Liquid for Commercial Seed Treatment: High Volume (Uniroyal Study)	7	1.9E+03	7	43	1.9E+03	42	No Data	No Data	No Data	No Data	No Data	No Data
(4d) Seed Handler/bagger: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	440	3.6E+04	430	3000	3.6E+04	2700	NE	NE	NE	NE	NE	NE
(4d) Seed Handler/bagger: Liquid for Commercial Seed Treatment: High Volume (Uniroyal Study)	180	1.5E+04	180	1224	1.5E+04	1100	NE	NE	NE	NE	NE	NE
(5) Loading Dust for Commercial Seed Treatment: Low (WP surrogate)	4.4	380	4	96	379	76	120	3.8E+03	120	1700	6.8E+04	1600
(5) Loading Dust for Commercial Seed Treatment: Typical (WP surrogate)	2.2	190	2	48	190	38	62	1.9E+03	60	830	3.4E+04	800
(5) Loading Dust for Commercial Seed Treatment: High (WP surrogate)	0.23	20	0.22	12	47	10	15	470	15	210	8.5E+03	200

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(6a) Applying to Turf/Golf Course with Groundboom Sprayer: low	250	4.8E+03	240	320	6.0E+03	300	NE	NE	NE	NE	NE	NE
(6a) Applying to Turf/Golf Course with Groundboom: typical	160	3.0E+03	150	160	3.0E+03	150	NE	NE	NE	NE	NE	NE
(6a) Applying to Turf/Golf Course with Groundboom: High	79	1.5E+03	75	79	1.5E+03	75	100	1.5E+04	100	NE	NE	NE
(6b) Applying Liquid In-furrow: low (Uniroyal Rate)	820	1.5E+04	770	820	1.5E+04	770	NE	NE	NE	NE	NE	NE
(6b) Applying Liquid In-furrow: typical	1.6E+03	3.0E+04	1.5E+03	1600	3.0E+04	1500	NE	NE	NE	NE	NE	NE
(6b) Applying Liquid In-furrow: high	790	1.5E+04	750	790	1.5E+04	750	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (Low) Uniroyal rate	400	2500	340	840	2500	630	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (typical)	770	4.8E+03	660	1.6E+03	4.8E+03	1210	NE	NE	NE	NE	NE	NE
(7) Combined M/L/App Granules In-Furrow to Soil (High)	600	3.8E+03	520	1.3E+03	3.8E+03	950	NE	NE	NE	NE	NE	NE
(8) Combined M/L/App EC In-Furrow to Soil (Uniroyal Rate)	44	1.3E+04	44	780	8500	720	NE	NE	NE	NE	NE	NE

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(8) Combined M/L/App EC In-Furrow to Soil	60	1.7E+04	60	1.1E+03	1.1E+04	960	NE	NE	NE	NE	NE	NE
(8) Combined M/L/App EC In-Furrow to Soil	30	8.5E+03	30	526	5.7E+03	480	NE	NE	NE	NE	NE	NE
(9) Mixing/Loading/Applying as a Seed Treatment (dry) in planter box [Fenske study data] (per lb seed)	No Data	1.9E+05	No Data	45	1.9E+05	45	No Data	No Data	No Data	No Data	No Data	No Data
(10) Mixing/Loading/Applying EC as Drench using Low pressure Handwand:Typical (per Gallon diluted mixture)	53	1.8E+05	53	1.3E+04	1.8E+05	1.2E+04	NE	NE	NE	No Data	No Data	No Data
(11) Mixing/Loading/Applying EC using High Pressure Handwand (ie, Nursery/Greenhouse): High	120	2.5E+03	120	120	2.5E+03	120	NE	NE	NE	No Data	No Data	No Data
(12) Loading+Applying Granules (1.3G) to Golf Course Turf using Belly Grinder: Typical Rate/Acre	7.5	1.2E+03	7	8	1.2E+03	8	13	1200	13	No Data	No Data	No Data
(13) Loading+Applying Granules (1.3G) to Golf Course Turf Using Push Type Spreader: Typical rate/Acre	5.1	2.4E+03	5	11	2.4E+03	11	20	2.4E+04	20	No Data	No Data	No Data

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(14) Loading+Applying Granules (1.3G) to Golf Course Turf Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)	1700	5.1E+03	1300	1.7E+03	5.1E+03	1300	NE	NE	NE	NE	NE	NE
(15) Combined M/L/App WP to Golf Course Turf via Groundboom (added 2 scenarios)	1.2	100	1	20	81	16	25	800	24	240	5.3E+03	230
(15) Combined M/L/App WP to Golf Course Turf via Groundboom	0.60	51	0.60	12	51	10	15	500	15	150	3.3E+03	140
(15) Combined M/L/App WP to Golf Course Turf via Groundboom	0.30	25	0.29	6	25	5	8	250	7	74	1.6E+03	71
(16) Mixing/Loading Applying Granules to Potting Soil (per CU yd)	1.3E+05	6.3E+05	1.1E+05	1.6E+05	6.3E+05	1.3E+05	NE	NE	NE	No Data	No Data	No Data
(17) Mixing/Loading/Applying WP to Potting Soil (per Cu Yd)	140	1.2E+04	140	2900	1.2E+04	2300	No Data	No Data	No Data	No Data	No Data	No Data

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(18) Loading+Applying Granules (8G) to Soil using Belly Grinder: Typical Rate/Acre	2.2	350	2	2	350	2	4	350	4	No Data	No Data	No Data
(19) Loading+Applying Granules (5G) to Soil using Belly Grinder: Typical Rate/Acre	1.9	310	2	2	310	2	3	310	3	No Data	No Data	No Data
(20) Loading+Applying Granules (5G) to Soil Using Push Type Spreader: Typical rate/Acre	1.3	610	11	3	610	3	5	6100	5	No Data	No Data	No Data
(21) Loading+Applying Granules (8G) to Soil Using Push Type Spreader: Typical rate/Acre	1.5	680	1.5	3	680	3	6	6800	6	No Data	No Data	No Data
(22) Loading+Applying Granules (8G) to Soil Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)	500	1500	370	500	1500	370	NE	NE	NE	NE	NE	NE
(23) Loading+Applying Granules (5G) to Soil Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)	55	170	41	55	170	41	61	1700	59	No Data	No Data	No Data

Table B5: Etridiazole Handler Risk Assessment: Intermediate-term MOEs

	Baseline (Single Layer Clothing)			Single Layer Clothing With Chemical Resistant Gloves			Coveralls Over Single Layer Clothing With Gloves and OV Respirator			Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only		
Exposure Scenario	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT Dermal & Inhalation MOE	Dermal IT MOE	Inhalation IT MOE	Combined IT /LT Dermal & Inhalation MOE
(24) Loading/Applying Granular via Power Dust Blower	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
(25) Dispersing Granules By Hand	1.8	420	2	2.8	420	3	4.9	4200	4.9	No Data	No Data	No Data

Note: table values were calculated using a spreadsheet and then rounded to two significant figures.

IT = Intermediate Term, generally one week to several months duration.

“No Data” indicates data not available for that scenario.

“NE” indicates scenario not evaluated.

Equations used in this table include:

Daily dermal exposure (mg ai/day) = Unit exposure (mg ai/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)

[Note: (lb ai/acre) and (A/day) are replaced, respectively, with (lb ai/gal) and (gal/day), or lb ai/lb seed when appropriate.]

Daily exposure (mg ai/day) = [Unit exposure (Fg/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)] / (1000 Fg/mg)

Potential absorbed daily dermal or inhalation dose = (mg ai/kg/day) x Absorption (100%) / Body weight

Body weight = short-term 60 kg; intermediate-term 70 kg

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

MOE_{Combined} = 1 / (1/MOE_{dermal} + 1/MOE_{inhalation})

Table B6: Etridiazole Handler: Cancer Risk Estimates										
Exposure Scenario	Private Application s Per Year	Commercial Applications Per Year	Baseline (Single Layer Clothing without Gloves)		Single Layer Clothing With Chemical Resistant Gloves		Coveralls Over Single Layer Clothing With Gloves and OV Respirator		Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only	
			(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	Single Layer with Gloves (Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk
(1a) Mixing/Loading Wettable Powder for Turf/Golf Course Groundboom Application: Typical	5	15	1.9E-03	5.6E-03	1.1E-04	3.2E-04	6.8E-05	2.0E-04	5.0E-06	1.5E-05
(1b) Mixing/Loading Wettable Powder for Chemigation Application (lb/1000 Gal): Typical	3	30	1.1E-05	1.1E-04	6.2E-07	6.2E-06	4.0E-07	4.0E-06	2.9E-08	2.9E-07
(2) Mixing/Loading Dry Flowable for In-Furrow Soil Application: Typical	3	12	3.9E-06	1.6E-05	3.9E-06	1.6E-05	2.8E-06	1.1E-05	NF	NF
(3) Loading Granular for in-Furrow Application: UniRoyal Estimated Rate	1	5	3.0E-07	1.5E-06	1.5E-07	1.1E-06	NE	NE	NE	NE
(3) Loading Granular for In-furrow Application: Typical	3	12	3.8E-07	1.5E-06	3.2E-07	1.3E-06	NE	NE	NE	NE
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Low (Uniroyal rate)	1	5	5.4E-05	2.7E-04	4.5E-07	2.3E-06	3.2E-07	1.6E-06	1.6E-07	8.1E-07
(4a) Mixing/Loading EC (Liquid) for In-furrow Application: Typical	3	12	8.6E-05	3.4E-04	7.2E-07	2.9E-06	5.1E-07	2.0E-06	2.6E-07	2.6E-06
(4b) Mixing/Loading Liquid for On-Farm Seed Treatment: Typical (Peanuts)	3	12	6.4E-06	2.5E-05	1.2E-07	3.5E-07	NE	NE	NE	NE
(4c) Loader/Applicator: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	20	60	2.4E-04	7.3E-04	4.3E-05	1.3E-04	No Data	No Data	No Data	No Data
(4d) Seed Handler/bagger: Liquid for Commercial Seed Treatment: Typical Rates (Uniroyal Study)	20	60	1.0E-05	3.1E-05	1.6E-06	4.8E-06	No Data	No Data	No Data	No Data

Table B6: Etridiazole Handler: Cancer Risk Estimates										
Exposure Scenario	Private Application s Per Year	Commercial Applications Per Year	Baseline (Single Layer Clothing without Gloves)		Single Layer Clothing With Chemical Resistant Gloves		Coveralls Over Single Layer Clothing With Gloves and OV Respirator		Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only	
			(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	Single Layer with Gloves (Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk
<i>(5) Loading Dust for Commercial Seed Treatment: Typical (WP surrogate)</i>	20	60	2.0E-03	6.0E-03	1.1E-04	3.4E-04	7.3E-05	2.2E-04	5.4E-06	1.6E-05
<i>(6a) Applying to Turf/Golf Course with Groundboom: typical</i>	5	15	7.3E-06	2.2E-05	7.3E-06	2.2E-05	5.5E-06	1.6E-05	2.5E-06	7.6E-06
<i>(6b) Applying Liquid In-furrow: low (Uniroyal rate)</i>	1	7	2.8E-07	2.0E-06	2.8E-07	1.4E-06	NE	NE	NE	NE
<i>(6b) Applying Liquid In-furrow: (typical rate)</i>	3	12	4.4E-07	1.8E-06	4.4E-07	1.8E-06	NE	NE	NE	NE
<i>(7) Combined M/L/App Granules In-Furrow to Soil (Low) Uniroyal Rate</i>	1	5	6.4E-07	3.2E-06	3.5E-07	1.7E-06	NE	NE	NE	NE
<i>(7) Combined M/L/App Granules In-Furrow to Soil (typical)</i>	3	12	9.9E-07	4.0E-06	5.4E-07	2.2E-06	NE	NE	NE	NE
<i>(8) Combined M/L/App EC In-Furrow to Soil (Uniroyal rate)</i>	1	7	5.0E-06	3.5E-05	3.1E-07	2.1E-06	NE	NE	NE	NE
<i>(8) Combined M/L/App EC In-Furrow to Soil (typical rate)</i>	3	12	1.1E-05	4.4E-05	6.8E-07	2.7E-06	NE	NE	NE	NE
<i>(9) Mixing/Loading/Applying as a Seed Treatment (dry) in planter box [Fenske study data] (per lb seed)</i>	7	21	No Data	No Data	3.4E-06	1.0E-04	No Data	No Data	No data	No Data
<i>(10) Mixing/Loading/Applying EC as Drench using Low pressure Handwand: Typical (per Gallon diluted mixture)</i>	3	30	1.2E-05	1.2E-04	5.6E-08	5.6E-07	NE	NE	NF	NF
<i>(11) Mixing/Loading/Applying EC using High Pressure Handwand (ie, Nursery/Greenhouse): High</i>	3	30	5.5E-06	5.5E-05	5.8E-06	5.8E-05	3.5E-06	3.5E-05	NF	NF

Table B6: Etridiazole Handler: Cancer Risk Estimates										
Exposure Scenario	Private Applications Per Year	Commercial Applications Per Year	Baseline (Single Layer Clothing without Gloves)		Single Layer Clothing With Chemical Resistant Gloves		Coveralls Over Single Layer Clothing With Gloves and OV Respirator		Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only	
			(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	Single Layer with Gloves (Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk
<i>(12) Loading+Applying Granules (1.3G) to Golf Course Turf using Belly Grinder: Typical Rate/Acre</i>	4	12	1.2E-04	3.5E-04	1.1E-04	3.3E-04	1.7E-05	1.7E-04	NF	NF
<i>(13) Loading+Applying Granules (1.3G) to Golf Course Turf Using Push Type Spreader: Typical rate/Acre</i>	4	12	1.7E-04	5.1E-04	7.7E-05	2.3E-04	1.1E-05	1.1E-04	NF	NF
<i>(14) Loading+Applying Granules (1.3G) to Golf Course Turf Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)</i>	4	12	6.8E-07	2.0E-06	6.8E-07	2.0E-06	4.6E-07	1.4E-06	NF	NF
<i>(15) Combined M/L/App WP to Golf Course Turf via Groundboom (typical rate)</i>	5	15	1.9E-03	5.6E-03	1.1E-04	3.3E-04	7.3E-05	1.5E-04	7.8E-06	1.6E-05
<i>(16) Mixing/Loading Applying Granules to Potting Soil (per CU yd)</i>	3	9	6.2E-09	1.9E-08	5.3E-09	1.6E-08	NE	NE	NF	NF
<i>(17) Mixing/Loading/Applying WP to Potting Soil (per Cu Yd)</i>	3	9	4.8E-06	1.4E-05	2.9E-07	8.6E-07	NE	NE	NF	NF
<i>(18) Loading+Applying Granules (8G) to Soil using Belly Grinder: Typical Rate/Acre</i>	3	9	3.1E-04	9.2E-04	2.9E-04	8.6E-04	1.8E-04	5.3E-04	NF	NF
<i>(19) Loading+Applying Granules (5G) to Soil using Belly Grinder: Typical Rate/Acre</i>	3	9	3.4E-04	1.0E-03	3.2E-04	9.6E-04	2.0E-04	5.9E-04	NF	NF
<i>(20) Loading+Applying Granules (5G) to Soil Using Push Type Spreader: Typical rate/Acre</i>	3	9	5.0E-04	1.5E-03	2.2E-04	6.7E-04	1.3E-04	3.9E-04	NF	NF
<i>(21) Loading+Applying Granules (8G) to Soil Using Push Type Spreader: Typical rate/Acre</i>	3	9	4.4E-04	1.3E-03	2.0E-04	6.0E-04	1.1E-04	3.4E-04	NF	NF

Table B6: Etridiazole Handler: Cancer Risk Estimates										
Exposure Scenario	Private Applications Per Year	Commercial Applications Per Year	Baseline (Single Layer Clothing without Gloves)		Single Layer Clothing With Chemical Resistant Gloves		Coveralls Over Single Layer Clothing With Gloves and OV Respirator		Engineering Controls: Closed System or Soluble Bag (for WP); Gloves for M/L Only	
			(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	Single Layer with Gloves (Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk	(Private) Cancer Risk	(Commercial) Cancer Risk
(22) Loading+Applying Granules (8G) to Soil Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)	3	9	1.8E-06	5.3E-06	1.8E-06	5.3E-06	1.2E-06	3.7E-06	NF	NF
(23) Loading+Applying Granules (5G) to Soil Using Tractor-pulled Spreader: Typical rate/ Acre (2 scenarios added)	3	9	1.6E-05	4.8E-05	1.6E-05	4.8E-05	1.1E-05	3.4E-05	NF	NF
(24) Loading/Applying Granular via Power Dust Blower	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
(25) Dispersing Granules By Hand, based on SOP	3	9	3.6E-04	1.1E-03	2.4E-04	7.2E-04	2.5E-05	7.4E-05	NA	NA

Note: table values were calculated using a spreadsheet and then rounded to two significant figures.

“No Data” indicates data not available for that scenario.

NE = Scenario not evaluated; NF = Not feasible with any known equipment; NA = not applicable to this scenario

Equations used in this table include:

Daily dermal exposure (mg ai/day) = Unit exposure (mg ai/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)

[Note: (lb ai/acre) and (A/day) are replaced, respectively, with (lb ai/gal) and (gal/day), or lb ai/lb seed when appropriate.]

Daily exposure (mg ai/day) = [Unit exposure (Fg/lb ai) x Application Rate (lb ai/A) x Daily Treatment (A/day)] / (1000 Fg/mg)

Potential absorbed daily dermal or inhalation dose = (mg ai/kg/day) x Absorption (100%) / Body weight

Body weight = short-term 60 kg; intermediate-term 70 kg

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

MOE_{ST,Combined} = 1 / (1/MOE_{ST,dermal} + 1/MOE_{ST,inhalation})

Cancer risk = LADD x Q₁* [0.0333 (mg/kg/day)⁻¹]

LADD = Lifetime Avg Daily Dose = Absorbed daily dose (based on 70 kg body wt) x Exposure Days/Yr * 35 years working
70 years (lifetime) x 365 days/yr

**Table B7: Occupational Post-Application Exposure Risks:
Terrazole Turf Residues: Post Application Day 0 (12 Hour Post-Application Study Data):
MOEs and Cancer Risk**

<i>Person/Activity</i>	<i>Study Residue (Fg/cm2)</i>	<i>Transfer Factor = cm²/hr</i>	<i>Dose mg/kg/day (Study Data)</i>	<i>ST MOE</i>	<i>IT MOE</i>	<i>Activity (Days/ Year)</i>	<i>IT LADD (mg/kg/day)</i>	<i>Cancer Risk (Study)</i>
Occupational Exposures								
<i>Tractor-Mowing^a</i>	<i>0.13</i>	<i>500</i>	<i>3.7E-03</i>	<i>3500</i>	<i>1300</i>	<i>120</i>	<i>6.1E-04</i>	<i>2.0E-05</i>
<i>Push-Mowing</i>	<i>0.13</i>	<i>1000</i>	<i>7.4E-03</i>	<i>1700</i>	<i>650</i>	<i>120</i>	<i>1.2E-03</i>	<i>4.0E-05</i>
<i>Potting/handling treated soil^b</i>	<i>0.37^c</i>	<i>NA</i>	<i>5.3E-3</i>	<i>2400</i>	<i>900</i>	<i>120</i>	<i>8.7E-04</i>	<i>2.9E-05</i>

^a Turf transferable residues study: EPA MRID 432878-02.

^b Potting soil study: EPA MRID 442787-01.

^c Soil residue = total dose as mg / 4 hr day from study; there is no appropriate transfer factor

Turf transferable residues study: EPA MRID 432878-02.

ST = Short-term exposure duration seven days or less

IT = Intermediate Term exposure duration, generally one week to several months.

[Calculations performed on a spreadsheet before rounding to two places; therefore there may appear to be errors due to rounding]

Dermal dose (mg ai/kg/day) = (TTR(t) [Fg/cm²] x Tc (cm²/hr) x DA x 0.001 mg/Fg conversion x # hours (4) worked(or played)/day) / body weight (70 kg)

“NA” indicates data not applicable for that scenario.

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

LADD = Lifetime Avg Daily Dose = Absorbed daily dose (based on 70 kg body wt) x Exposure Days/Yr * 35 years working
70 years (lifetime) x 365 days/yr

Cancer risk = LADD x Q₁* [0.0333 (mg/kg/day)⁻¹]

**Table B8: Post-application Handling of Seed Treated with Terrazole For Planting Cotton
Single Layer No Gloves Scenario**

Formulation	Mixer/Loader + Applicator Unit Exposure: (mg/lb ai handled)		Application Rate (lb ai/100 lb cotton seed)	Dermal Dose (mg ai/day)	Inhalation Dose (mg ai/day)	MOE: Total Dose: Dermal + Inhalation		LADD:		Cancer Risk	
	Dermal	Inhalation				Short-Term	Intermediate-Term	Private Farm (7 days)	Commercial (20 days)	Private Farm (7 days)	Commercial (20 days)
Dust	0.018	0.0029	0.05	0.013	0.0021	60,000	22,000	2.1E-06	5.9E-06	6.8E-08	2.0E-07
Liquid			0.0625	0.016	0.0026	48,000	18,000	2.5E-06	7.3E-06	8.4E-08	2.4E-07

[Calculations performed on a spreadsheet before rounding to two places; therefore there may appear to be errors due to rounding]

Assumption: cotton seed treated using either dust or liquid at label rates shown in table.

Cotton seed planted over 80 acres = 1440 lbs seed handled per day.

Dose (mg ai/day) = PHED unit exposure for loading & applying granular formulation (mg/lb ai handled) x Application rate/lb seed x seed handled (lb/day)

Body weight = short-term 60 kg; intermediate-to-long term or cancer risk = 70 kg

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

LADD = Lifetime Avg Daily Dose = $\frac{\text{Absorbed daily dose (based on 70 kg body wt)} \times \text{Exposure Days/Yr} \times 35 \text{ years working}}{70 \text{ years (lifetime)} \times 365 \text{ days/yr}}$

Cancer risk = LADD x Q_1^* [0.0333 (mg/kg/day)⁻¹]

Table B9: Terrazole Turf Residues: Post Application Day 0 (12 hr Post-Application): MOEs and Cancer Risk							
Non-Occupational Exposures							
<i>Person/Activity</i>	<i>Study Residue (Fg/cm2)</i>	<i>Transfer Factor = cm2/hr</i>	<i>Dose mg/kg/day</i>	<i>ST MOE</i>	<i>Activity (Days/ Year)</i>	<i>LADD mg/kg/day</i>	<i>Cancer Risk Estimate</i>
<i>Golfing Adult (60 kg)</i>	<i>0.13</i>	<i>100</i>	<i>8.7E-04</i>	<i>1.7E+04</i>	<i>18</i>	<i>2.6E-05</i>	<i>8.7E-07</i>

Turf transferable residues study: EPA MRID 432878-02.

[Calculations performed on a spreadsheet before rounding to two places; therefore there may appear to be errors due to rounding]

ST = Short Term exposure, generally less than one week

Dermal dose (mg ai/kg/day) = (TTR(t) [Fg/cm²] x Tc (cm²/hr) x DA x 0.001 mg/Fg conversion x # hours (4) played/day) / body weight (kg)

Body weight = short-term 60 kg; intermediate-to-long term or cancer risk = 70 kg

MOE = NOAEL (mg/kg/day) / Potential Daily Dose (mg/kg/day)

*LADD = Lifetime Avg Daily Dose = Absorbed daily dose (based on 70 kg body wt) x Exposure Days/Yr * 50 years playing*
70 years (lifetime) x 365 days/yr

Cancer risk = LADD x Q₁ [0.0333 (mg/kg/day)⁻¹]*